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ORIGINAL COMMUNICATIONS.

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TUBERCULOSIS OF THE MOUTH.*

BY ROBERT LEVY, M.D., DENVER, COLO.

Tuberculous lesions of the mouth include those involving the lips, cheeks, gums, hard palate, soft palate, tongue, teeth and alveolar process. Tuberculosis of the pharynx is not included in this paper, although it is difficult to draw the dividing line. So large a subject as tuberculosis of the tonsils forms a sub-division of pharyngeal tuberculosis and is also omitted from this discussion, although it will be necessary for purposes of comparison and illustration to touch upon all lesions of tubercular character ordinarily seen by what is known as pharyngoscopy. It is comparatively rare to see isolated lesions involving but one of the structures included in the mouth, and it is the author's belief that such rare cases form a class by themselves, possessing the same general characteristics that other tuberculosis lesions of the upper air passages do, but marking a distinct difference in course and prognosis.

A careful review of over 200 references, abstracts of which will appear in a subsequent paper, impresses one with the rather large number of tuberculous lesions of the mouth which have, from the time of Thomae's article,[1] 1839, been reported. The largest number, however, have appeared within comparatively recent years and I wish to mention especially the early articles of Bosworth,[2] DeBlois,[3] Delavan.[4] Yet when one analizes the extensive literature, he must be struck by the general inaccuracy in diagnosis and the lack of appreciation of district variations and differences in these lesions; differences which are of special importance in etiology and prognosis.

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FORMS.

Tuberculous lesions may manifest themselves in different forms, i. e., according to pathologic changes, according to mode of development and according to their clinical course.

First; the various pathologic alterations seen are nodular infiltration, superficial ulceration, deep ulceration, perforating ulceration, necrosis of bone, chronic abscess and tumor.

Second; according to the mode of development, we have two forms, "endogenous" and "ectogenous" (Grünwald),[5] which corresponds to the general classification of Holländer[6] into "descending" and "ascending."

Third; according to clinical course, we may have "malignant" and "benign."

Clinical observation confirms this classification. The "extogenous" or "ascending" form, that which may be designated as the inoculation variety or purely local, represents the less active, sluggish or "benign" type, while the "endogenous" or "descending" variety, that which represents infection through blood and lymph streams, through miliary deposits or infection from within, corresponds to the more active, virulent, malignant type.

ETIOLOGY.

It is a well established fact that tuberculosis of the upper air passages, and particularly of the mouth and pharynx, is more commonly found in males than females. This leads to the question of how far local irritation of the mouth and possibly slight injury of the mucous membrane enter into causation of tuberculosis. This also raises the question as to the existence of primary tuberculosis of these structures. There are innumerable cases upon record in which the only demonstrable lesion is that localized in the mouth and especially upon the tongue. In these cases, the history of ulceration following a slight injury to the mucous membrane, which although nothing more than an abrasion to begin with, refused to heal, should be fairly conclusive proof that the abraded surface was an easy portal of infection in which tubercle bacilli became lodged, the characteristic tubercular process following. On the other hand, assuming that there is a necessary vulnerability without which tubercle bacilli may be innocuous, leads to the belief that there already exists in individuals developing such a localized tuberculosis, another and primary focus of infection. Auguy[7], 1895, and others since then have stated that the most frequent mode of infection is through the blood current. Walsham[8] has shown the importance of the lymphatic system in the development of tuberculosis especially with regard to the frequency with which infection may be conveyed to the bronchial glands from above, through the adenoid tissue in the throat, including the pharyngeal and faucial tonsils. It has been unquestionably demonstrated that tuberculous infection may invade the system through the tonsils without producing any alteration in the tonsils themselves. It has also been shown by Cook[9] that the teeth, especially when diseased, form excellent foci through which infection may be carried to the adjacent lymphatic structures. The question, therefore, becomes an extremely complicated one, especially when we remember that post mortem examinations have revealed the presence of foci of tuberculosis in the lungs which were not suspected and could not have been demonstrated ante mortem. It seems reasonable to conclude that, although local or systemic causes exist, infection may descend through the lymphatic system to the bronchial glands, invade surrounding structures and be carried by the blood current to such parts as the tongue, the lips, the gums or the hard palate, and that additional local irritation or trauma, however slight, may determine the outward manifestation of tuberculosis in these regions. Ragged, sharp or decayed teeth, extraction of teeth, poorly fitting dentures, biting the tongue, injury from pins or other sharp bodies in the mouth constitute the more common local cause. In fact, when we consider that the mucous membrane of the mouth, although more or less constantly bathed in tubercle bacilli laden sputum in tuberculous individuals, develops tuberculous lesions but rarely, one must admit that there exists a special protective agency. This protective agency obtains so long as the surface of the mucous membrane is not altered either by traumatism or pathologic changes. Once this protective agency is in a measure diminished, local tuberculosis may manifest itself. The more frequently one sees tuberculosis of a given organ, the more reasonable it is to presume that the infection of that structure came about through the blood or the lymph current. The less frequently certain structures are involved, the more reasonable to suppose that some local cause must operate to overcome its invulnerability. This thought is supported in the classification of Grünwald, Walsham and others as well as in the clinical history. It is a recognized fact that the so-called primary lesions of the mouth are more sluggish and less malignant than the secondary varieties, the latter developing through blood and lymph current in an organism abundantly attacked by the tuberculous process. This though is further borne out by the slow and comparatively non-malignant affections of the gums, the hard palate, the lips, the cheeks and the tongue, and the rapidly progressing, actively malignant course of tuberculosis of the pharynx and tonsils.

SUBJECTIVE SYMPTOMS.

Tuberculous lesions involving the tongue, the lips, the gums, may exist for some time before the patient is aware of their presence. Even ulcerating lesions may develop to a considerable extent before attracting attention. In this respect, these lesions differ from those involving the pharynx and larynx. The earliest manifestation is a sense of slight soreness or burning, marked particularly when the diseased surface is irritated by contact with food. Soreness may become decided pain, more especially when the lesions involve the tongue. When seen upon the hard palate or gums the pain rarely becomes severe, differing from the usual intense pain of tuberculous ulcers. There is localized swelling and slight increase in the secretion of the parts, which becomes viscid, grayish white or dirty. A slight odor is often apparent, although rarely becoming offensive. Even when the ulceration has gone on to marked necrosis of the underlying structures, the odor that is at time discernable may be attributed to the general cachexia of the individual rather than to the local lesions. Glandular involvement may or may not be present. I have seen it in very early lesions and have failed to discover any enlargement of cervical glands in cases far advanced. When it does exist it is rarely painful. In tuberculosis of the tongue, lips, gums or palate, the general symptoms of the patient are comparatively slight except in those cases which develop in the course of severe general infection, such as is found in a miliary process. These severe cases are usually marked by the rapid development of lesions extending to the soft palate, the tonsils and the surrounding pharyngeal structures when dysphagia and odynophagia of severe type, high temperature, rapid pulse, marked emaciation and exhaustion may be added to the symptoms.

OBJECTIVE SYMPTOMS.

Excluding those isolated instances of tumor and abscess,[10] there is apparent to the most casual observer a definitely uniform local lesion. The general appearance is that of a pale, superficial ulceration without inflammatory areola, edges irregular in outline and beveled or undermined, tending to spread latterly, not deeply. A viscid, dirty white secretion covers the ulceration, which when cleaned away brings to view a more or less nodular appearance.

Scattered irregularly over the surface of the ulceration and upon its margins are seen small red, soft granulations, interspersed with pin head spots of yellow or gray. These yellow spots, the spots of Trelat,[11] may be seen also upon the mucous membrane adjacent to the ulceration.

Case 1 (Figures 1 and 2) demonstrates very early as well as moderately advanced tuberculosis of the gums. This patient, aged 26, was first seen in December, 1906, having been referred by Dr Bergtold. He has had pulmonary tuberculosis one year. In August, 1906, the gums became sore. There was also some soreness in the nose and larynx, the latter inducing painful and difficult swallowing. A typical tuberculous ulcer was seen upon the left surface of the nasal septum. The larynx presented pale infiltration of both arytenoids with numerous small ulcers and grayish deposits. The gums over the first bicuspid on the right side of the upper jaw and over the first and second bicuspid right side, lower jaw, were seen to be covered with small redish nodules, very superficial ulcers and a few pin head yellowish spots. The typical tuberculous appearance of a very early lesion was readily demonstrated. Upon the lingual surface of the gums of the first and second molars, lower jaw left side, more advanced lesion was seen, possessing, however, the same characteristic nodular superficial ulceration with redish and yellowish spots. Although typical in appearance, repeated and thorough examination of curettings of these lesions by Dr. Todd failed to demonstrate the presence of tubercle bacilli.

The margins of the ulcerations are rarely indurated. Upon the tongue, however, a slight induration may be felt and especially where healing has occurred, leaving the organ markedly fissured. The character of these indurations is a fibrosis, which has occurred in the healing process.

Case II (Figures 3 and 4) shows a typical case of tuberculosis of the tongue. Figure 1 illustrates the fissured appearance which has resulted in the healing process. The induration on the margin of these fissures being marked. Figure 2 shows an active lesion at the tip of the tongue, presenting all the usual characteristics of tuberculous ulceration. This case was that of a man aged 35, who has had tuberculosis for seven years. He came to Colorado immediately upon development of the trouble. Eleven years ago or four years before pulmonary tuberculosis was detected, he had a small superficial ulcer upon the dorsum of the tongue, which refused to heal. Subsequently similar ulcerations on the dorsum developed and continued active for an indefinite period. The patient cannot state exactly when healing began. One year ago the ulceration upon the tip developed, which was extremely painful, a symptom which did not obtain in the ulceration upon the dorsum. When seen at the National Jewish Hospital for Consumptives in December, 1906, the healing process upon the dorsum of the tongue was complete with the exception of two small lesions. The tip of the tongue, however, was in a condition of active ulceration. Careful curettings from the dorsal as well as tip ulcers, showed tubercle bacilli in intimate relation with the epithelium cells. At the present time, May 23rd, 1907, the patient's general condition is slowly failing, the ulceration upon the tongue, both dorsal and tip, are perfectly cicatrized.

When the disease extends to the soft palate, the anterior or posterior pillars, the uvula or the tonsils, a somewhat different picture presents itself. The very earliest appearance is a marked pallor which is heightened by an edematous swelling. This edema may be extremely slight, but it gives to the structure a characteristic appearance. Very careful observation will reveal the presence of numerous yellow or grayish pin head spots just under the surface of these pale, edematous structures.

Case III. (Figure 5.) This condition is typically illustrated by the following cases. C. Mc., male, aged 28, referred to me Oct. 2nd, 1906, by Dr. S. Solis Cohen of Philadelphia. The patient had slight pulmonary involvement and a tuberculous ulcer of the left arytenoid and vocal band. These lesions had improved under Dr. Cohen's treatment, the improvement continuing after coming to Colorado. On the 27th of February, 1907, both tonsils were swollen, pale and dotted with a few small grayish deposits. The posterior pillars were slightly edematous. The patient's general condition was failing. A small piece of tonsillar tissue was removed and sections made by Dr. Todd, who reported numerous miliary tubercles, giant cells and caseous centers. A few tubercle bacilli were demonstrated at the edges of the caseous areas.

Case IV. (Figure 6.) Male, aged 24, referred by Dr. Levitt of New York. This patient was presented before the section of Laryngology at the New York Academy of Medicine by Dr. Emil Mayer, Feb. 27th, 1907, demonstrating a possible primary lupus of the larynx. Upon examining the patient March 9th, there were found slight pulmonary involvement, swollen epiglottis, which was red and covered with pin head grayish tubercles and notched in the center, probably from a section removed. The aryepiglottic folds were swollen, pale, edematous and covered with grayish deposits. The arytenoids were moderately swollen and pale. The patient's condition rapidly grew worse and upon April 9th, there was discovered on the right tonsil a whitish deposit. The left tonsil presented a small, irregular, nodular ulceration with whitish imbedded masses. Scrapings from both tonsils were submitted to Dr. Todd, who reported as follows: "The preparation from the left tonsil shows numerous cells, the structure of which cannot be clearly seen. Careful search shows very few tubercle bacilli scattered among them. The cover glass preparation from the right tonsil contains many squamous epithelial cells and a few other cells which cannot be made out distinctly, and some degenerated material. No tubercle bacilli can be found. Figure 6 shows distinct difference between the two tonsils, the right presenting an exudate upon its surface, while the left shows the typical tubercular appearance. The difference in the two tonsils as demonstrated clinically is borne out by the laboratory report.

Following the deposit of tubercles ulceration rapidly develops, the yellowish spots breaking down and coalescing in an irregular manner, giving to the surface of the ulceration the characteristic worm eaten or mouse nibbled appearance. When the ulcerations become deep, as they sometimes do, they still retain upon their margins the characteristic tubercular appearance. This is demonstrated by the following case:

Case V. (Figure 7.) Male, aged 44, advanced tuberculosis of the lungs and larynx of two years' standing. Three weeks before I saw this case the gums became sore and an ulcer developed upon the upper jaw. This seemed to be the result of loose and decayed teeth, which were plainly apparent. The ulceration is a typical deep tubercular ulceration extending to the alveolar process, which is itself necrosed, showing an exposed tooth root. A section of the margin of the ulcer was removed and the laboratory report gives the following: Granulation tissue and a few well defined tubercles with caseous centers; small numbers of tubercle bacilli scattered about the periphery of the tubercles.

Extensive ulcerations involving the soft palate and posterior structures are illustrated by:

Case VI. (Figure 8.) Male, aged 40, advanced tuberculosis of the lungs, sore throat at times during the past seven years. For three weeks past there has been painful and difficult swallowing. Examination of the pharynx shows extensive mouse eaten appearance involving soft palate, both pillars of the fauces, tonsils, uvula and posterior wall of the pharynx downwards to the left side of the larynx. The ulceration extending forward as far as the junction of the soft with the hard palate.

DIAGNOSIS.

The lack of scientific accuracy so frequently displayed in the diagnosis of tuberculosis of the mouth and pharynx is worthy of note. Any or every ulceration of the mucous membrane of the mouth or pharynx in a tuberculous individual is not necessarily tuberculous. It is feared that this has too often been believed and that it may be the reason so many cases of cure have been reported.

Illustrating this, I present:

Case VII. (Figure 9.) H. T., aged 32, tuberculosis of the lungs, one year. Ulceration on the under surface of the tip of the tongue for six months. These ulcerations are two in number and are not painful. They present a marked red, inflammatory areola, are irregular in outline and show nowhere any of the characteristic grayish or yellow spots, or redish granulations. They are evidently due to contact with the sharp lower incisors, aggravated probably by more or less persistent coughing. When last seen, May 19th, the lower ulceration had entirely healed without treatment.

The diagnosis is certain when there is a pale ulceration, without inflammatory areola, superficial, worm eaten in appearance, dotted with redish pin head elevations and having small yellow or grayish spots scattered throughout. An early diagnosis when the soft palate or tonsils are involved may be assumed when there appears an extremely pale, slightly edematous mucous membrane with small, sub-mucous, pin head, yellow spots.

These diagnostic features, however, are not always present, although they do exist in the vast majority of instances. In all cases the diagnosis should be confirmed by the microscopic findings, and in obscure cases this and the inoculation of Guinea pigs are the only positive tests. The finding of giant cells and caseous material together in sections is almost certain proof of tuberculosis.

In case of the ulcers, the laboratory confirms the diagnosis, according to Dr. J. C. Todd of the Pathological Laboratory of the Denver and Gross College of Medicine, in two ways:

1. Detection of tubercle bacilli, (a) by the microscope, or (b) by inoculation of Guinea pigs.
2. Detection of the histological structures of tubercle in stained sections.

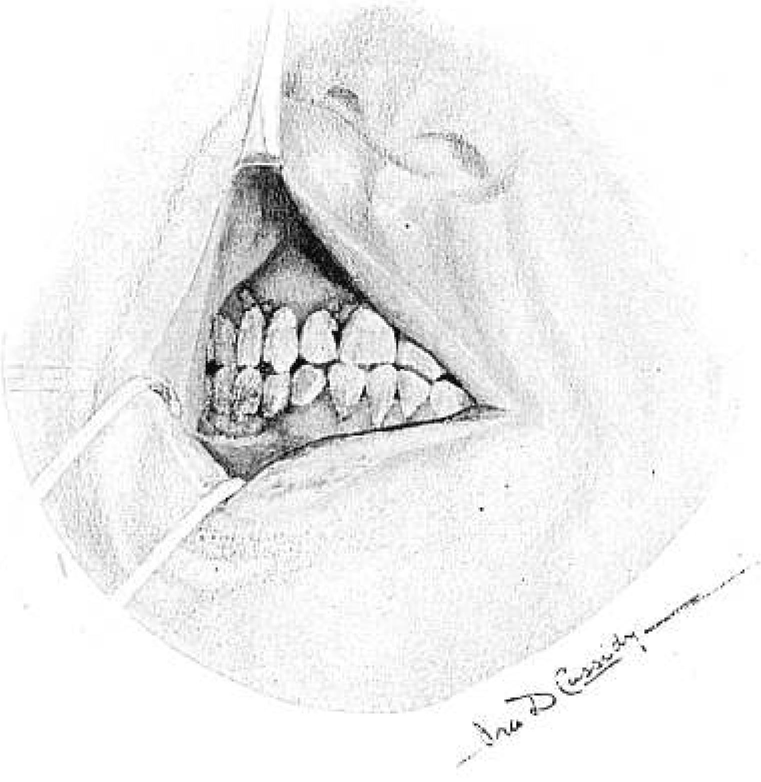

FIGURE 1. CASE 1.

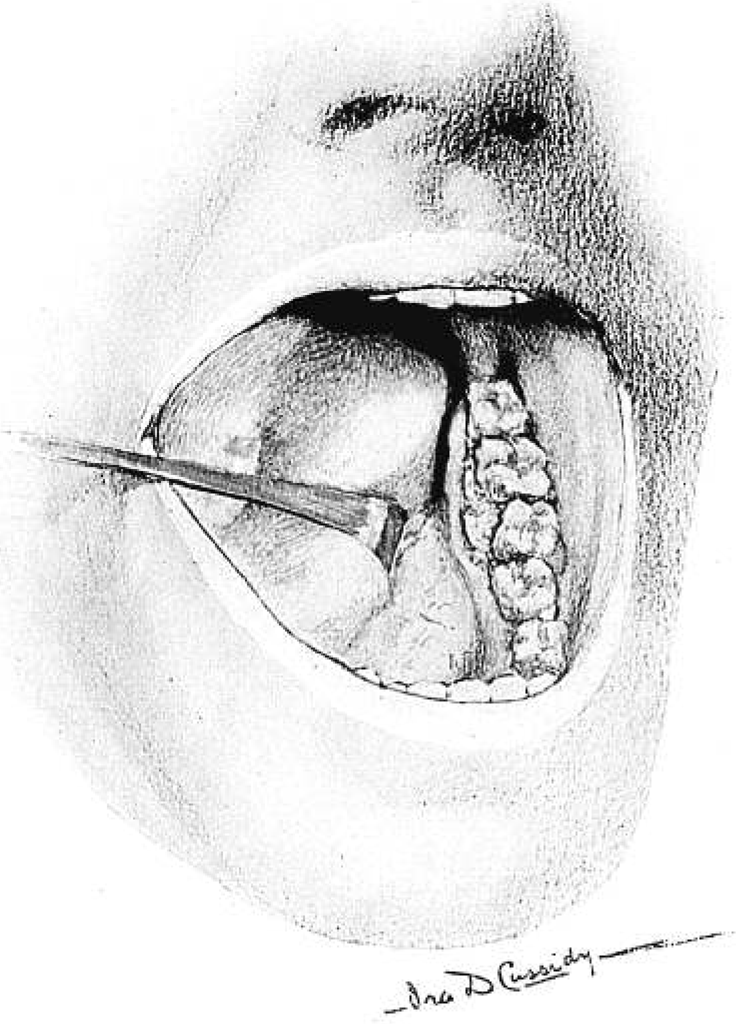

FIGURE II. CASE I.

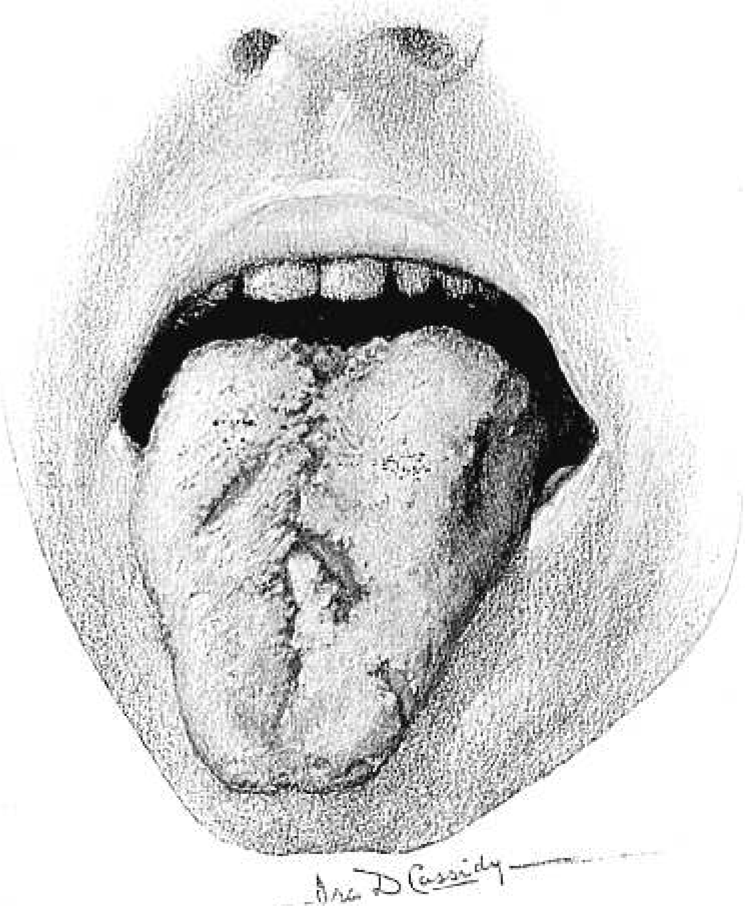

FIGURE III. CASE II.

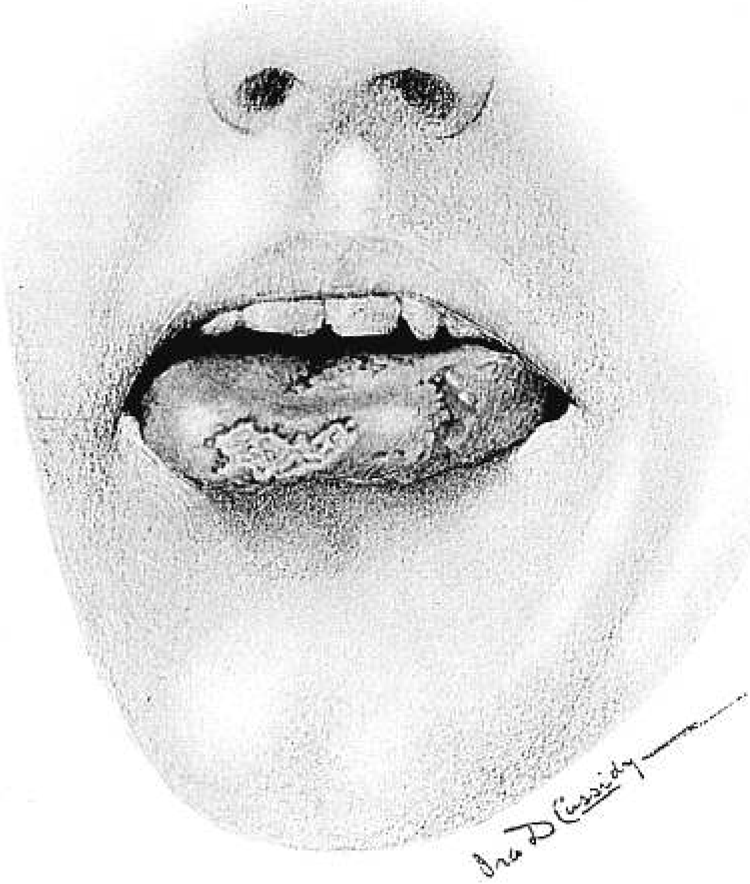

FIGURE IV. CASE II.

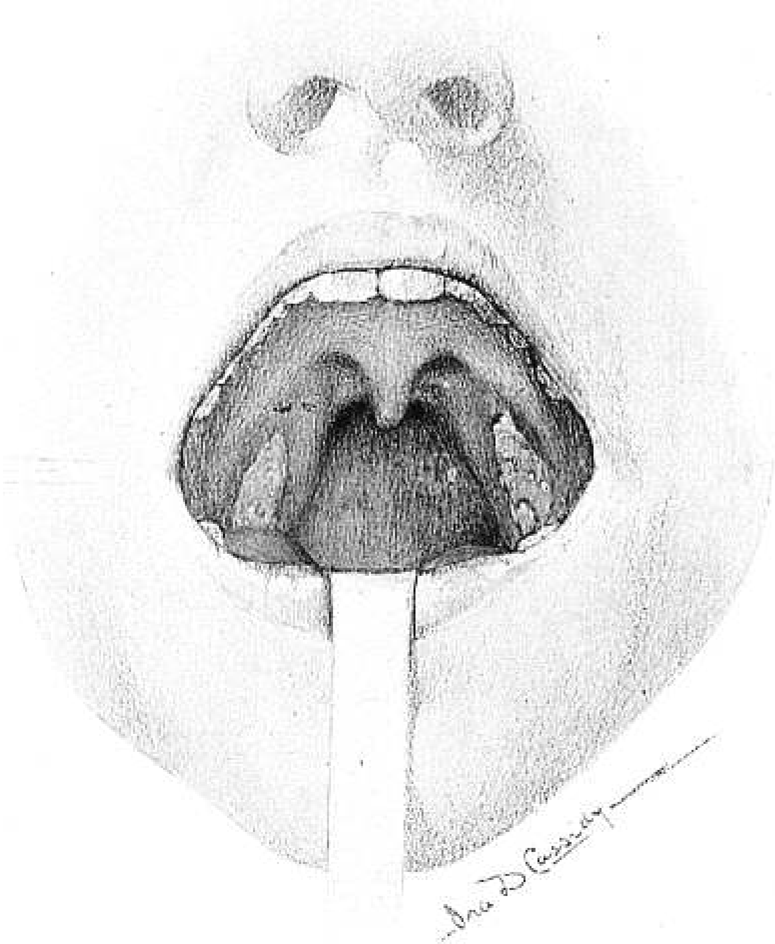

FIGURE V. CASE III.

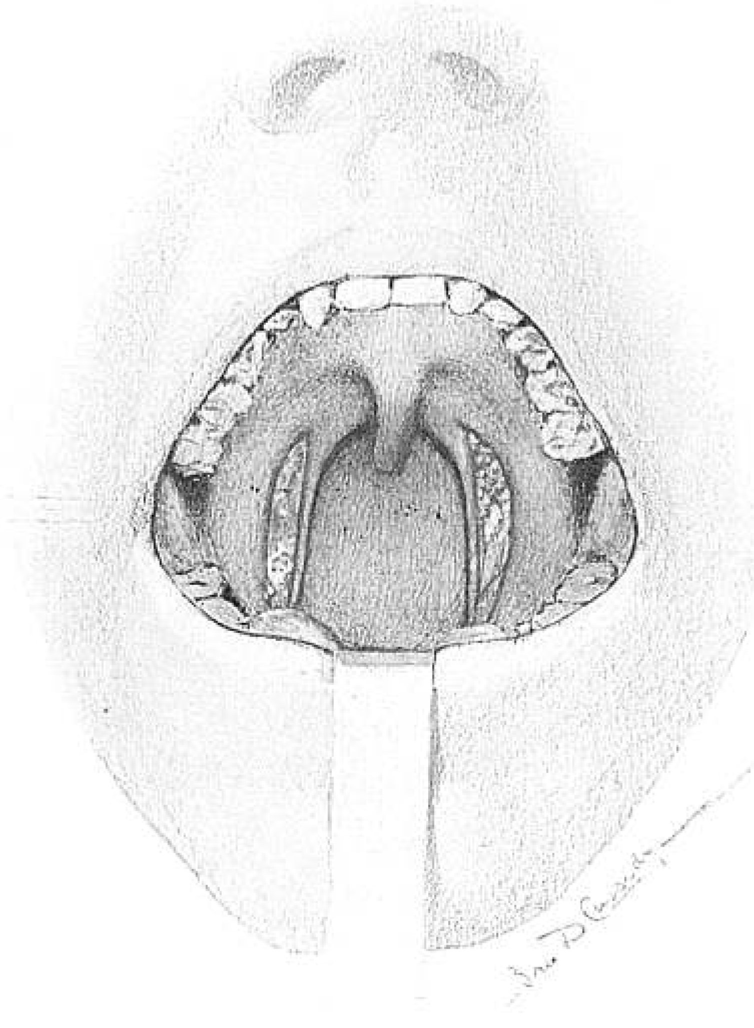

FIGURE VI. CASE IV.

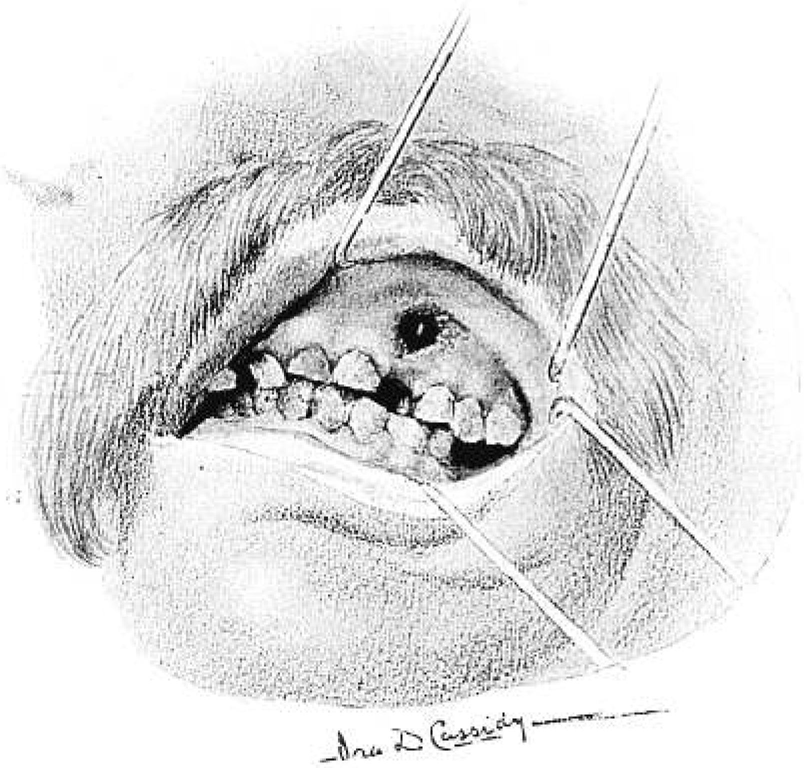

FIGURE VII. CASE V.

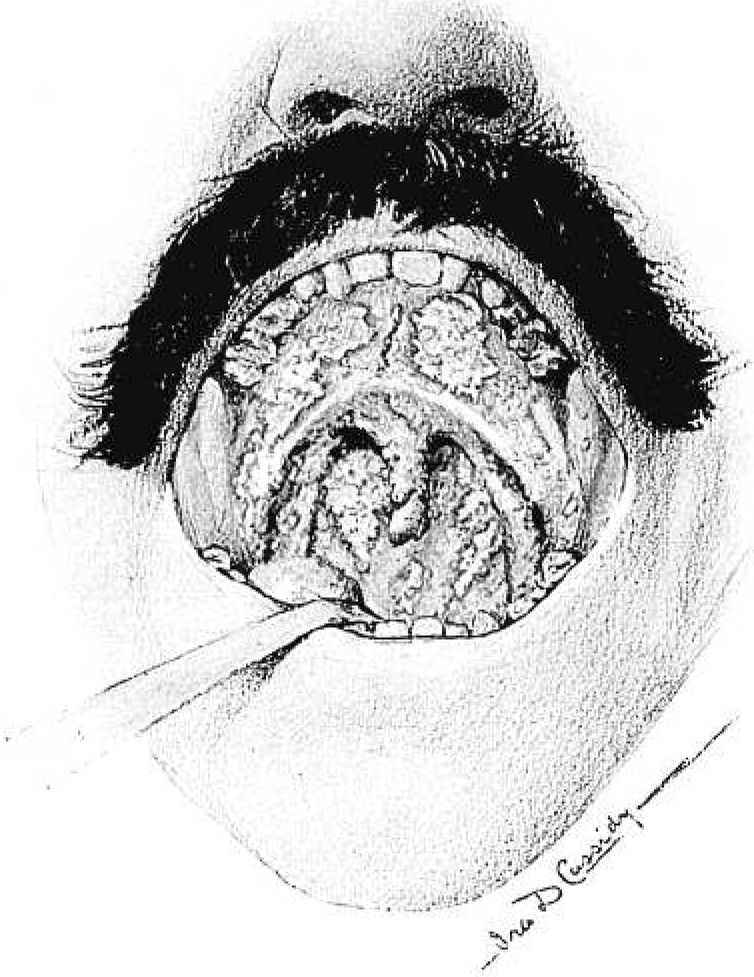

FIGURE VIII. CASE VI.

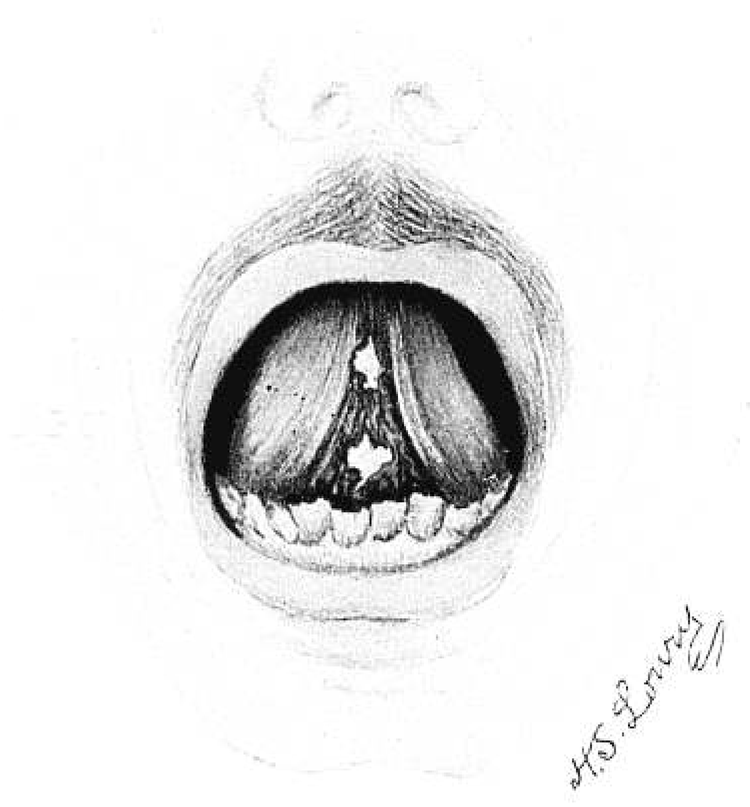

FIGURE IX. CASE VII.

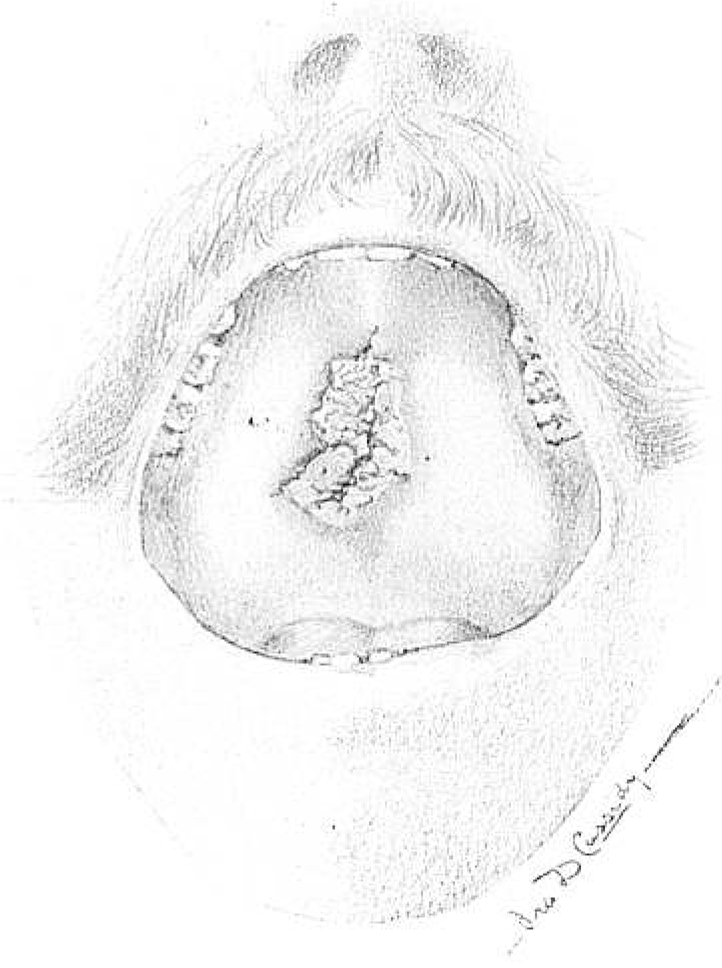

FIGURE X. CASE VIII.

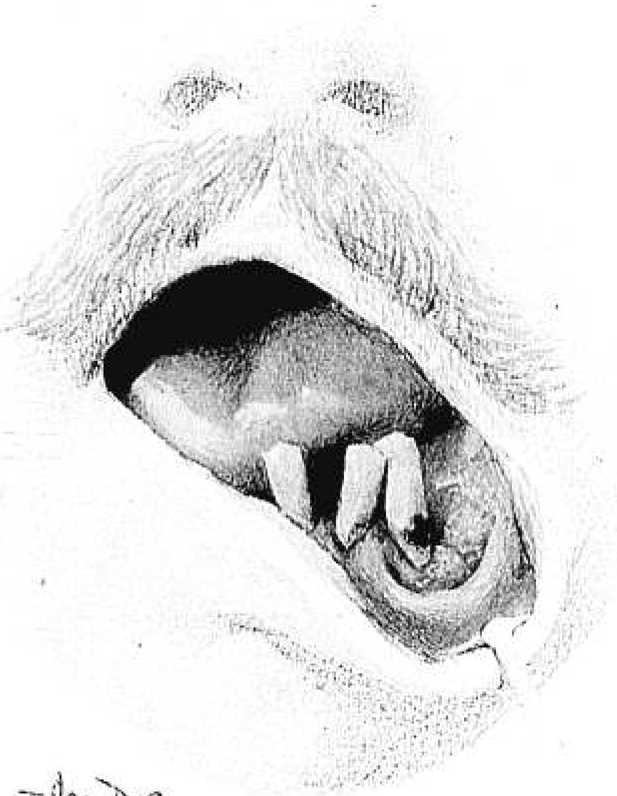

Figure XI. Case VIII.

(1) Detection of the bacilli:

(a) Owing to possible presence of tubercle bacilli in the mouth, simple examination of swabs from the surface of the ulcer is of little value. The surface of the ulcer should be thoroughly cleansed and then under cocaine, curetted; or a piece of sufficient size for sections should be exercised. Curettings are to be thoroughly rubbed between slides or cover glasses until the cells are sufficiently dissociated to allow thin smears. The presence of tubercle bacilli in the smears may be taken as proof of tuberculosis, provided the surface of the ulcer was well cleansed, and this is made absolutely sure by finding the bacilli within the small clumps of cells which the rubbing between slides failed to separate.

When a piece of sufficient size can be excised, it should be sectioned and stained for tubercle bacilli. Tubercle bacilli are sometimes abundant even when the structure of the tubercle is very doubtful.

(b) Inoculation of Guinea pigs is resorted to only when other means fail.

(2) The histological structure of the miliary tubercle can generally be found in portions of tissue which have been sectioned and stained. Recognition of the tubercle depends upon the presence and, especially, the arrangement of certain structures; no one structure is diagnostic in itself, although its presence may be very suggestive. However, the presence of giant cells and caseation *together* may generally be accepted as proof when the structure is not otherwise typical and only as forming a part of a tubercle.

Grünwald[12] has shown how difficult it is to find tubercle bacilli in all tuberculous ulcerations. Hajek[13] has also called attention to this fact in tuberculosis of the nose, therefore, one cannot place all of his reliance upon the presence of these organisms. With few exceptions will one fail to find them present if sufficiently long and accurate search be made. They are usually few in number and scattered and are rarely absent in typical lesions. In the cases presented under Figures 1 and 2, the local lesions were absolutely typical in appearance, but in spite of most thorough and repeated search, tubercle bacilli were not found.

PROGNOSIS.

When the affection involves the structures anterior to the soft palate including the tongue, gums, lips, cheek, hard palate, the prognosis so far as the general lesion is concerned is of comparatively little importance.

Case VIII. (Figures 10 and 11.) V. G. L., aged 58, has been ill with tuberculosis of the lungs for over fifteen years. Slight ulceration of the hard palate and gums were noticed in October, 1906. These lesions have been comparatively free from pain. There is, however, marked soreness and discomfort especially upon eating. Figure 10 shows a typical and characteristic tuberculous ulceration of the hard palate with beveled edges and nodular base. Figure 11 shows more advanced tuberculosis of the gums, rather deeper than usual with undermined edges, especially inferiorily. Careful curettings from both of these ulcers were examined by Dr. Todd, who easily demonstrated tubercle bacilli, but the entire absence of all other bacteria showed the thoroughness with which the parts were cleansed and proved conclusively that the tubercle bacilli were obtained from the surface of the ulcerations themselves and were not the result of contamination.

Tuberculous ulcerations rarely heal, but at the same time their progress is extremely slow. They are the source of but little discomfort and have no special bearing upon the course of an associated general or pulmonary tuberculosis except in so far as they indicate involvement of a small amount of additional tissue. Some of these cases have been said to heal spontaneously, others to have been cured by excision or cauterization. Unquestionably a few rare instances of such cures may be accepted as authentic, such cases representing that comparatively benign form described as "ectogenous' or "ascending." Bernheim[14] states that in buccopharyngeal tuberculosis a cure is the rule. Gleason[15] also states that the "Prognosis as regards healing is favorable." So firmly convinced am I that these statements are erroneous that I venture to question the diagnosis.

When tuberculous lesions involve the soft palate, uvula, the tonsils, anterior pillars and the structures posteriorily, the prognosis is of very much more significance. Not only is the prognosis of the local lesion absolutely unfavorable, but their effect upon the general condition of the patient is so deleterious that one can predict decline and an early and fatal termination. Lesions here are positive evidence of rapidly disseminating miliary tuberculosis.

Two exceptions to the above statements should be made. First, when the lesion involves the tongue the prognosis may be quite as unfavorable as when it involves the pharyngeal structures and second, comparatively benign lesion may exist in the posterior wall of the pharynx.

TREATMENT.

This consists in palliative and curative and should be both local and general. Palliative treatment is directed to the relief of pain. The local application of cocaine or of powdered orthofórm are the most valuable remedies. Pain may also be mitigated by curetting and cauterizing, on the theory that the pain is due not so much to the exposed nerves as to the development of small neuromata upon the exposed nerve filaments.

Curative ulcers which involve a small portion of the tip or margin of the tongue, or localized tumors have been removed by more or less extensive, radical excisions. Temporary healing may be brought about by thorough cauterization followed by frictional rubbings with lactic acid or formalin. Galvano cautery has been of some avail and particularly have I seen early tubercular ulcers of the tonsils, lips and tongue healed under this treatment. Usually these healed ulcers reappear or there develop others adjacent to them. In spite of the generally accepted ultimate fatal outcome of these cases, one should not neglect an attempt at cure, and therefore, in addition to local treatment the usual attention should be paid to the patient's general welfare. Rest is of prime consideration, owing to the frequent presence of high temperature. The patient's nutrition should be maintained to the highest possible standard by the administration of large quantities of easily digested, nutritious food. When much pain exists this becomes a question of serious moment and local anaesthetics should be abundantly applied. Feeding by means of esophageal tubes cannot be recommended, for the passage of such a tube is of as much discomfort to the patient as the act of swallowing.

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